

Leading Baryons in p+A Interactions at 12 and 18GeV/c

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Abstract

The study of baryon stopping in heavy-ion collisions provides important information regarding the strong interaction in the nuclear medium. Although many experiments have measured the charged leading baryon distributions, there have been no leading neutral baryon measurements in p-A collisions at the AGS. Measurement of the leading neutral baryons will complement the charged leading baryon measurements, allowing a study of isospin exchange in the nuclear medium and providing a more complete picture of baryon stopping. AGS Experiment 941 has measured the target and energy dependence of the yields for both charged and neutral leading baryons using protons of two beam momenta, 12 and 18 GeV/c, and Be, Al, Cu and Pb targets. The experiment uses the E864 spectrometer with its high data rate and large acceptance. The neutral baryon measurement makes use of the high resolution lead-scintillator spaghetti calorimeter. Invariant multiplicities will be presented for proton and neutrons in a rapidity range of $1.7 \leq y \leq 3.3$, and a transverse momentum range of $.075 \text{ GeV/c} \leq p_t \leq 1.025 \text{ GeV/c}$. We will compare these new data with other experimental results and with model calculations to provide insight into the dynamics of p-A interactions and discuss the implications for heavy ion collisions.
